

The Effect of (Think – Pair – Share) Strategy on the Achievement of Third Grade Student in Sciences in the Educational District of Irbid

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Abstract

The current research aims at knowing the impact of (Think – Pair – Share) strategy on the achievement of third grade student in sciences in the educational district of Irbid, it was used the semi experimental in this study, the sample of study consisted of (120) students of third grade student in the educational district of Irbid, They were distributed into two groups: the control group which consisted of (30) male students and (30) female students; and the experimental group which consisted of (30) male students and (30) female students, the findings of the study show that there are statistically differences in grades of students due to group variable at the significance level (0.05), and the differences were in favor of the experimental group and there are statistically differences due to gender at the significance level (0.05) in favor of females. The study recommended to entry (Think – Pair – Share) strategy within the teaching strategies used by students during the teaching and the involvement of teachers in training courses on (Think – Pair – Share) strategy.

Keywords: Think – Pair – Share, third Grade student, Sciences

1. Introduction

Conventional breeding patterns are unable to cope with the great changes experienced by the world due to increase scientific and technological knowledge which requires a renewed breeding work on Acquisition of scientific facts and using them to absorb and keep up with those changes (Abu koshk, 2000).

The educational institutions in the level of public education in Iraq is still dependent on the conservation and memorization in the teaching of all scientific material, As well as neglecting to use effective teaching methods, leading to underachievement then decline the educational level of students in general science subjects (Abood, 2007).

Cooperative learning is one of the active learning strategies and so on with the process of learning as a replacement for the traditional system of learning so as the process of learning for traditional learning system by Small learning groups (Zaitwan, 2013).

This learning is educationally, focused on its recent studies special attention and the side effects have affect on the behavior and learning (Nasrallah, 2016).

There are many forms of cooperative learning, but these forms share with each other whereas it allows the learners opportunities to work together in various cooperative groups, featuring every form by including the quality of the work and how its performance or its implementation, and get a bonus in the event of accuracy in the achievement and the speed, among the most prominent of these shapes are: teams collective learning and learning teams together, Jksso way, the collective research and method relativism or structural curve).

(Think – Pair – Share) Strategy is one of group discussion strategies falling within curved structural and it is a method of diverse methods of learning collaborative.

This method was developed by Kagan (1991) through provide the teacher flexible ways to implement cooperative learning Especially after Kagan made a repertoire of free content activities As the teacher works to choose appropriate content, and it is the whole lesson preparation and formulation of cognitive objectives, The cooperative which form the basis, Fall into this way (Think – Pair – Share) Strategy Which in turn will help learners to think by giving them time to think, Then involved with another colleague and look at the different point of view, They may be more willing and less apprehensive about sharing with a larger group, and it gives them time to change their response if needed And reduce the fear of giving the wrong answer and is encouraging them to participate cooperative, mutual learning between individuals, and ensure that the contribution of each student's work.

(Think – Pair – Share) Strategy is one of the active cooperative learning strategies where they are used to activate the students' previous knowledge of the position of education or to work the reaction about mathematical problem (Nasr, 2003).

Strategic steps of (Think – Pair – Share) is posed some of the questions to the class about what has been explained about the activity or an issue or a task and then ask the students to think for a minute about this question alone with the prevention of talk or walk around in the classroom at the time of thinking, Then the teacher asks students to splitting up into pairs to discuss and think together about a question or posed activity for a period of five minutes finally, the teacher are required from couples to participate by displaying what has been

reached of solutions and ideas about the question or activity And it Is characterized by give the student an opportunity to reflect (with himself internally and externally with colleagues) And thinking and revision before answering (Zaitun, 2007).

Strategic steps of (Think – Pair – Share)

(Think – Pair – Share) Strategy comes according to the following steps:

The first step: thinking step

(Think – Pair – Share) Strategy started when the teacher is offering a question exciting to think or a problem related to the topic of the lesson to search for a solution Then the teacher asked the students to think alone to resolve the issue or problem at hand and give them a specific time to think and The time is determined for individual reflection on the basis of students' knowledge and the nature of the question and the degree of complexity (Susun, 2001).

The second step: pairing step

The teacher asks from students to splitting up into pairs and discusses what they think about it who shall each student to discuss and share ideas reached by thinking step with his colleague who sits next to him and each of them is trying to make his point to his colleague and convince him Also exchange views and ideas to reach a common answer (Christine, 2001).

The third step: Sharing step

The teacher can participate each pair of students with another pair to consist square of students to think together and this is will save time and effort on the teacher, Rather the teacher discuss (20) pairs of students, for example, will be discussed (10) groups at the same time (Saleh and Ibrahim, 2015).

(Think – Pair – Share) Strategy is modern teaching strategies which it doesn't aimed to provide students the achievement just but also it aims to stimulate their energies and develop their abilities and They can deal with historical events It is also suitable for students of all ages and suitable teachers who engage in cooperative learning for the first time (Ahmed, 2006).

1.2. Previous studies

Ahmad (2016) this research aims at identifying the effect of (think Pair Share) and (Sequenced Questions) Strategies on Fifth Primary Students Achievement and retention at Sciences. The Sample of the Study consists of (70) Students. The Sample is distributed as Follows : (24) Students in the First experimental group which is taught according to (Think Pair Share) Strategy (23) Students in the Second experimental group which is taught according to Sequenced Questions Strategy and (23) Students in the control group which is taught according to the traditional way of Teaching . The three groups are matched in terms of the following variables: the Students age (in months) their intelligence their Parents academic level of education their achievement at Sciences (in the Fourth Primary Stage) the researcher has Constructed an achievement test which includes (20) items. These items are multiple Choice items. The validity of this test has been ascertained and also reliability is obtained by using Pearson Correlation. Formula which yields (0.83) Coefficient, after analyzing the results statistically it has revealed a Statistically Significant differences in favor to the experimental groups the First and the second Ines in achievement and retention.

Salman (2015) this research aims to know the effectiveness of strategies in each "active learning (role playing, strategy (think-pair-share) in Collecting pupils grade 5 in Arabic grammar material/"researcher has formulated that there is statistically significant difference at the level indication (0.05) between average pupils first pilot group who studied strategy role-playing, and the average And rewarded the researcher groups search, and use appropriate statistical methods, the researcher found the effectiveness of strategy role-playing in grade 5 pupils collection of Arabic grammar, and their impact on the left to choose the role of pupils and strengthened language abilities and self-confidence The effectiveness of the strategy (think-pair-share) in improving the collection of the pupils and retaining them and instilled in their minds through individual reflection and sharing with others and put the researcher some proposals and recommendations that are described by the research.

Sultani (2015) the research aims to study the effect of a strategy for Lehman (Think - Pair - share) in the collection of schoolgirls fifth grade and the level of ambitions in science general , study sample consisted of pupils School Aleem fifth grade primary school for the academic year 2013-2014 and reached their number (80) schoolgirl . The results of research on the following: the presence of statistically significant differences at the level (0.05) between the average score for the collection of students who are studying using a strategy (Think - Pair - co), and the average score for the collection of students who are studying in the usual way in science public.

Saleh and Ibrahim (2015) the research aims at know the Effect of (think, pair, share) strategy on the students of Biology achievement in Algas and their attitude toward it. To fulfill this aim ,the following decimal hypothesis are made:1)There is no statistical differences in the achievement on level(0,05) between the students who study according to (think-pair, share) strategy and those who study according to the ordinary way of teaching in Algas subject.2)There is no statistical difference in scientific on level (0,05) between of the students

who study according to (think, pair, share) strategy and those who study according to the ordinary way. The sample was two groups of students who were chosen from the third grade of Biology department /college of Education for pure Sciences/ University of Diyala. The first experimental group which was composed of (45) students study according to (think, pair, share) strategy, The second standard group which was composed of (45) students study according to the ordinary was of teaching .The time was the first course of 2013-2014.After equating the two groups, the researchers used the post achievement test and measuring of attitudes which is prepared for this purpose .The results were the superiority of the first experimental group in achievement and attitude. Finally, the researcher made their remarks and conclusions.

Awaid and Abood (2014) the research aims to know the effect of (Think-pair-share) strategy on the students' achievement and the improvement of students' attitude toward chemistry. The sample of the study consisted of an experimental group (27) students and controlled group (27) students. The tool of the test contained the achievement test as the attitude test towards chemistry. After the application of the test, the results explained that there is a difference with a statistical meaning for the sake of the experimental group that studied according to the strategy of (Think-pair-share) and in the attitude towards teaching chemistry. According to the results, the researchers recommended to adopt the strategy in the teaching Chemistry for the students of the first-year intermediate and the effect of this role on the students' achievement and attitude in teaching chemistry.

Althelab and omar (2013) the study aims at knowing the impact of (think – pair – share) strategy on the achievement of second grade intermediate female students in mathematics and their reasoning thinking. A sample of (44) female students has been chosen and distributed to two classes consisting each of (22) female students, The first class represents the experimental group which studies according to the (think – pair – share) strategy and the second is the control group which studies according to the traditional method. The study required two tools: the first is an acquisitive test consisting of (25) items whereas the second tool is the reasoning thinking test prepared by Butrus (2004) which consists of (30) test items. After collecting and statistically analyzing the data by using the t-test for two independent samples, the results have revealed the following: the superiority of the experimental group who studied according to (think – pair – share) strategy to the control group in achievement and reasoning think.

Gafoor (2012) the research aims at knowing the effect of using strategy of (Think-Match-Participate) in Acquisition of mathematical concepts for Third stage students of Teachers Training institute. There are 2 section in the institute, The Researcher chose section (A) as an experimental group and section (B) as a control group, The Research applied his Research after finishing all Requirements (Teaching plans and preparing Achievement Test), After making analysis for the results, the researcher find a statistical significant differences between the two groups for the side of experimental group. The Researcher concluded the following: The strategy of (Think-Match-Participate) participated in students Acquisition for mathematical concepts and this strategy participated in students' participation in problem solving during the lesson.

Khaji (2010) the research aimed to investigate the effectiveness of (Think-pair-share) strategy to acquire physics concepts and the development trend towards solving physics issues among students in first grade, researcher has been divided groups into two groups, the experimental group consisted of 27 students, and the control group consisted of (25) Student, researcher has used the test as a tool for the study, and the results of the study showed that no difference statistically significant among the experimental group in the acquisition of physical concepts in the light of this, the researcher recommends the adoption of a strategy (Think-pair-share) in teaching physics for the students of the first grade for its role influential to acquire physics concepts.

1.3. Comment on previous studies

Through a review of previous studies, it was observed that there are studies from Jickso strategy as al-Qaisi study (2015) and al-Obeidi (2012), it is noted that all of these studies have used the test as a tool to detect the variables and also we note that it was their work through it in several countries, In Sudan was Abu Shouk study (2010) and in Syria was Deep study (2011).

2. Problem of the study

The reality of science teaching suffers many obstacles in achieving the educational goals; we often hear complaints in the teaching of science in our schools and traditional methods still based on conservation and indoctrination are prevailing, which resulted in a decrease in the level of achievement among students. This was confirmed by several studies as (Mahmoud, 2016) and (Bawi, 2012), so the study was to answer the following question: **Are there statistically significant differences ($\alpha \leq 0.05$) between the mean scores of the study sample in the impact of (Think – Pair – Share) strategy on the achievement of third grade student in sciences in the educational district of Irbid due to the variables (group and gender)?**

4. Research Objectives

The research aims at knowing the impact of (Think – Pair – Share) strategy on the achievement of third grade

student in sciences in the educational district of Irbid.

5. Significance of Study

The significance of (Think – Pair – Share) strategy that helps the students in process information, develop communication skills and refine their thinking, it can be applied in any number of students, it is also characterized by undemanding, can give students time to think alone, give him a chance to think out loud with one of his colleagues, increase the sense of participation in the learning process, and include the participation of the largest number of students in the classroom to develop the academic achievement and accept colleagues. This strategy works to overcome some of the problems: The acquisition of a limited number of students to participate and short time for students to think.

6. Limitations

The following are limitations to the study:

1. The study focuses on the impact of (Think – Pair – Share) strategy on the achievement of third grade student in sciences in the educational district of Irbid.
2. This study was limited to a sample of students in primary third grade at Mustafa Wahbi al-tall school and mixed Mghair School.
3. The schools of study were selected from a range of schools, and to consent to the application of the study procedures and to provide appropriate assistance to work.
4. It has been identified to measure achievement of the scientific concepts by using a test developed for the purposes of the present study.

7. Key Terms

-(Think – Pair – Share) strategy: is a cooperative learning technique in which students think through questions using three distinct steps, encouraging individual participation, Whereas the teacher divided the students into groups, each group consisting of four students.

-Achievement: is the result of what students learn after the completion of a study of educational material directly, and it measured by the total of marks in the test, which was prepared for this purpose.

-Third grade: is the third year of primary education in the first semester of the year 2016/2017.

-The normal way: are steps that determine the course of action and it identified procedural by offer the educational material using different instructional except the story, such as board, chalk, pen and paper, and the basic role of the teacher, and the participation of the learner.

8. Study Approach:

The researcher has used the semi experimental to suitability the nature of the study, and its ability to achieve its goals, using the post measure for the two sets of experimental group and control group.

8.1. Population of study:

The study population consisted of all third grade students in the educational district of Irbid and registered for the academic year 2016/2017, and number reached (2435) students.

8.2. The study sample:

The sample of study consisted of (120) students from the primary third-graders, they were selected from two schools; one from males and another from females, the groups of study was distributed in each school randomly to the experimental groups and the control group, the experimental group consisted of 60 students (30 males and 30 females) and the control group consisted of (60) students (30 males and 30 females).

8.3.Instrumentation:

To achieve the objectives of this study, it was used the following instruments: -

First, the educational material: it is divided into two sections:

(Think – Pair – Share) strategy and the mechanism for its implementation

It was agreed with the teachers in both schools to teach students in accordance with (Think – Pair – Share) strategy and to ensure the readiness of teachers in learning strategy; they discussed worksheets, activities, and related material units and mobility between the mentioned lessons activities.

Educational material in (Think – Pair – Share) strategy

This study applied to material units and plant parts and functions of the third grade, that need to be applied (25) classroom, it took five weeks at a rate of five servings per week for each group, The lessons included many of the media, Educational tools that integrate the learner effectively through (Think – Pair – Share) strategy Which

is studying whereas teachers are moving flexibility with educational material, Lessons have been using (Think – Pair – Share) strategy in a particular pattern and specific mechanism.

Educational material in traditional teaching method

Educational material used in this study consisted of material units, plant parts and functions to be taught in a science book (Part I) for third grade Scheduled by the Ministry of Education for the academic year 2016/2017. It was identified behavioral objectives expected to be achieved for the teaching of subjects, which takes into account their diversity in terms of fields and levels.

Secondly: Achievement Test

It has been developed (22) Question of multiple choice (4 options), then making adjustments by the arbitrators were adopted (20) question.

Correlation test:

The test was corrected to give one degree for the correct answer and (zero) degree to wrong answer, and thus the overall grade for the test consists of 20 degrees.

8.4. Difficulty and discriminate indices for test

In order to ensure the validity of the test was extracted difficulty and discriminate indices for each item and test as a whole, (Table 1) illustrates this.

Table (1) difficulty and discriminate indices for each item and test as a whole

No.	Difficulty index	Discriminate index	No.	Difficulty index	Discriminate index
1	0.55	0.61	11	0.53	0.56
2	0.46	0.51	12	0.55	0.59
3	0.61	0.53	13	0.59	0.63
4	0.52	0.58	14	0.48	0.52
5	0.66	0.51	15	0.62	0.67
6	0.41	0.47	16	0.50	0.61
7	0.46	0.52	17	0.43	0.48
8	0.44	0.45	18	0.45	0.49
9	0.51	0.49	19	0.59	0.63
10	0.55	0.61	20	0.41	0.43
Test as a whole	0.52	0.58			

Table (1) shows that difficulty indices for items of test ranged between (0.41 - 0.66) and difficulty index for testing as a whole was (0.41) this shows the degree of medium difficulty and is suitable to apply the test.

But discriminate indices show the ability of test items to distinguish between weak group and strong group in the achievement ranged between (0.41 - 0.67) and discriminate index for the test as a whole was (0.58) This demonstrates the ability of discriminate is acceptable for the purposes of test application, Whereas the test is considered acceptable if the discriminate index increased from (0.30).

The validity of Achievement Test

To make sure of the validity test, it was distributed to (8) arbitrators from experts in the field of learning and modern teaching methods in universities, two teachers are studying the same curriculum and supervisor of school stage, then he asked them to give their comments and suggestions on the achievement test questions, The test was edit based on comments and suggestions, So a couple of questions was deleted, to become a component of the test (20) Question of multiple choice.

The reliability of Achievement Test

In order to extract the reliability of achievement test was applied Cooder Richardson equation (20) on all the paragraphs of the test amounted to (0.841), it was applied twice in two weeks on a prospective sample of 25 students from outside the study sample, and account between Pearson Correlation Between the two applications, where was (0.89), it is a high values, indicating a high degree of reliability of the application for testing purposes.

8.5. Study Procedures

The study was conducted in accordance with the following procedures:

1. Prepare achievement test commensurate with required material and educational goals in the textbook.
2. Get the book to school administrators concerned with the study, coordination with the management of both schools to conduct the study, implementation of lessons by learning of the experimental group, and implementation of the lessons in the usual way for the control group.
3. Determine the community and members of the study, which was divided into two groups: Experimental consisted of 30 male and 30 female, who studied in built-learning and a control group, which consisted

of 30 male and 30 female, who studied in the traditional manner.

4. (Think – Pair – Share) strategy started on a sample study for two months, of which two servings per week, a total of (16) class, and a time of 45 minutes for one class.
5. Equalization of experimental and control teacher in terms of expertise, efficiency and the ability to teach.
6. The study test applied and the test time is 45 minutes, to measure the improvement in the experimental group students.

8.6. The study variables:

- Independent variables included two variables: the group has two categories (control and experimental) and gender has two categories (male and female).
- Dependent variables: academic achievement.

8.7. Statistical Treatment:

To answer the study question was used the following statistical methods: difficulty and discriminate indices for all the items of the test and the test as a whole, The Cooder Richardson equation (20), to make sure of the stability, (2- Way ANOVA) to make sure that equalization of the two groups on the pre application and (2- Way ANCOVA) to detect differences between the two groups on the post application existence of pre.

8.8. Parity between two groups on the teaching strategy test:

To make sure from equalization of the two groups on the pre measurement on achievement of third-grade students in Irbid, it was applied (ANOVA) and the following are the results:

Table (2) the means and standard deviations of pre measurements due to group variable and gender

Group	Gender	Means	S.D
Control (n=60)	Male(n=30)	12.80	2.23
	Female(n=30)	12.53	2.39
	Total	12.67	2.30
Experimental (n=60)	Male(n=30)	12.00	3.22
	Female(n=30)	12.00	2.03
	Total	12.00	2.67

Table 2 shows that the means of the control and experimental groups were convergent; to detect statistical significance between them due to of group and gender variables, it was applied (ANOVA), Table 3 illustrates this.

Table (4) shows as follows:

Table (3) the results of (ANOVA) to detect differences between two groups on the pre measurement (n = 120)

Variable	Sum of Squares	DF	Mean Square	F	Sig.
Group	13.333	1	13.333	2.118	0.148
Gender	0.533	1	0.533	0.085	0.772
Group*Gender	0.533	1	0.533	0.085	0.772
The error	730.267	116	6.295		
Total	744.667	119			

Table (3) shows that (F) is not statistically significant at the significance level (0.05), and this shows the parity between two groups (control and experimental) on the pre measurement

Question of the study:

Are there statistically significant differences ($\alpha \leq 0.05$) between the mean scores of the study sample in the impact of (Think – Pair – Share) strategy on the achievement of third grade student in sciences in the educational district of Irbid due to the variables (group and gender)?

To answer this question, it was extracted means and standard deviations of the estimates of the study sample on the pre dimensional for the control and experimental groups, as it has been apply (ANCOVA) to detect differences between the two groups on pre measurement to take account of the post differences between the two groups in achievement, table 4 illustrates this.

Table (4) means and standard deviations for the study sample grades in pre and post measurements which adjusted due to group and gender variable

Group	Gender	Pre measurement		Post measurement		Corrected Means	The standard error
		Mean	SD	Mean	SD		
Control	Male	12.80	2.23	18.98	0.89	18.986	0.268
	Female	12.53	2.39	19.23	1.87	19.242	0.267
	Total	12.67	2.31	19.11	1.38	19.114	0.268
Experimental	Male	12.00	3.22	26.53	1.61	26.520	0.268
	Female	12.00	2.03	27.43	1.28	27.420	0.268
	Total	12.00	2.63	26.98	1.45	26.970	0.268

Table (4) shows the existence of differences between means for study sample grades in the post measurement and modified due to group, gender variable, and to ensure from statistical significance of these differences, it was applied (ANCOVA) Table 4 illustrates this:

Table (4) the results of (ANCOVA) to detect the differences due to group and gender variables (n = 120)

Source	Sum of Squares	DF	Mean Square	F	Sig.	Eta Squared
Pre measurement	1.227	1	1.227	0.574	0.450	0.005
Group	1818.874	1	1818.874	850.495	0.000	0.881
Gender	10.019	1	10.019	4.685	0.032	0.039
Group*gender	3.111	1	3.111	1.455	0.230	0.012
The error	245.940	115	2.139			
Total	2124.792	119				

Table (4) shows as follows:

- There is statistically significant differences in the scores of students due to group variable at the significance level (0.05), (F) was (850.495) and at statistically significant is (0.000) and the differences in favor of the experimental group, means is (26.970) for the experimental group, while the means was for the control group (19.114), and amounted to impact the size of the group variable (88%) and is a high value, it indicate to the effect of strategy of teaching used in the improvement of the achievement level for the students compared with the control group, which has been taught in the traditional way.

(Think – Pair – Share) strategy due to make students axis the educational process and give them the freedom to express their views without fear or hesitation. This study has been agreed with the (Sultani, 2015; and Althelab and Omar, 2013), which showed superiority of the group that studied Think – Pair – Share) strategy.

- There is statistically significant differences due to gender at the significance level (0.05), (F) was (4.685) and statistically significant (0.032) and the differences in favor of females, with a mean (23.331) for females, While the means for males was (22.753) and totaled impact of the gender variable (3.9%), which indicates to little impact, The researcher attributes this result to that the students are exposed to more disciplined learning environment, in terms of classroom environment and teaching methods; Where the educational environment is less punitive and more enthusiastic, and male students exposed to less disciplined and less enthusiastic, whereas male students face the most severe sanctions.

9. Recommendations:

The study recommended to entry (Think – Pair – Share) strategy within the teaching strategies used by students during the teaching and the involvement of teachers in training courses on (Think – Pair – Share) strategy, and to conduct further studies on the strategy for another stages.

10. References

- 1) Abood, Suhad Abdul Ameer. (2007). The impact of a specimen Rigelot to acquire chemical concepts and retain and develop a love of scientific survey for the second grade students average, unpublished Master Thesis, Ibn al-Haytham- College of Education, University of Baghdad, Baghdad, Iraq
- 2) Abu kishk, Mohammad Nayef. (2000). The new role of the Arab teacher in the face of challenges in the twenty-first century, Abstracts of the Seventh research conference to the Union of Arab educators (February 5 to 8).
- 3) Ahmed, Mahabad Abdul Karim. (2016). the effect of (think Pair Share) and (Sequenced Questions) Strategies on Fifth Primary Students Achievement and retention at Sciences, Journal of College of Basic Education. 22 (94).403 - 442.
- 4) Ahmed, samah abd al-hameed Salman. (2006). the effect of using (Think – Pair – Share) strategy in the development of critical thinking in math and in the attitudes of life for the students of the preparatory stage,

Unpublished MA Thesis, Suez Canal University, College of Education, Port Said, Egypt.

- 5) Al-Sultani, Nasrin. (2015). the effect of a strategy for Lehman (Think - Pair - share) in the collection of schoolgirls fifth grade and the level of ambitions in science general. Journal of Babyl Center for the Humanities, 5 (1) 553 - 586.
- 6) Althelab, Said Hussein; and Omar, Tahani Ghalib. (2013). the impact of (think – pair – share) strategy on the achievement of second grade intermediate female students in mathematics and their reasoning thinking, Faraaheedi Journal, (17) December 312 - 333.
- 7) Awid, Faleh Abdal_husn; and Abood, Suhad, Abdul Ameer. (2014). the effect of (Think-pair-share) strategy on the students' achievement and the improvement of students' attitude toward chemistry, Journal of alfatih.10 (58) 149 - 168.
- 8) Bawi, Hassan Hamid Hassan. (2012). The effect of active learning in the development of innovative thinking among middle school students in history, unpublished Master Thesis, School of Education and Human Sciences - University of Diyala, Iraq.
- 9) Christine,s.(2001),using think-pair-share team up to learning from each other ,the johns hopking university, Baltimore,Maryland.
- 10) Gafoor, Kamal Ismail. (2012). The effect of using (think, pair, share) strategy in Acquisition of mathematical concepts for Third stage students of Teachers Training institute, Diyala Journal of Human Research, (55) 598 - 615.
- 11) Khaji, Tahani Hassan. (2010). the effectiveness of (Think-pair-share) strategy to acquire physics concepts and the development trend towards solving physics issues among students in first grade, Al Fath Journal, 6 (44) 139 - 156.
- 12) Mahmoud, Ahmed Mohamed. (2016). The impact of (think, pair, share) strategy in achievement of fifth-grade students in history, Al Fath journal (68) December 382 -407.
- 13) Nasr, Mahmoud. (2003). The impact of (think, pair, share) strategy with the help of computer architecture and environmental engineering materials in the teaching fourth grade primary on Achievement and retention of trend Mutual, the third scientific conference, the Egyptian Association for Mathematics Educations.
- 14) Saleh, Hossam Yusuf and Ibrahim, Hadeel Sajid. (2015). the Effect of (think, pair, share) strategy on the students of Biology achievement in Algas and their attitude toward it. Diyala Journal of Human Research, 66.1- 19.
- 15) Salman, Huda Mohammad. (2015). the effectiveness of strategies in each "active learning (role playing, strategy (think-pair-share) in Collecting pupils grade 5 in Arabic grammar material. Journal of Humanities. 2 (22) 787 to 804.
- 16) Susan,L.(2001),using think-pair-share in collage classroom, center for learning and teaching excellence, Arizona state university.
- 17) Zaitoun, Ayesh Mahmoud. (2007). Constructivist theory and strategies for teaching science, Dar alshrouq for Publishing and Distribution, first (ed), Amman-Jordan.